

Climate Models—Evaluation

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ABSTRACT

Climate modelling has developed rapidly since 1990, and current models are able to simulate many aspects of the observed climate. The extent to which differences among coupled models affect their simulations of climate change is, however, not yet fully understood. Considerable progress has been made in evaluating the performance of the component atmospheric, oceanic, land surface and sea-ice models and their interactions. Given the correct sea surface temperature, most atmospheric models simulate the observed large-scale climate with skill thanks to improvements in parameterization and resolution. The validation of land surface parameterizations continues to be hindered by the lack of observations. High resolution ocean models simulate mesoscale ocean eddies in striking detail, but their computational cost is presently prohibitive for coupled climate simulations.

The lack of observations and comprehensive datasets specifically designed for model validation limits the evaluation of coupled climate models and their components. In addition to data rescue and re-analysis efforts, a comprehensive global climate observing system is urgently needed.

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